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ABSTRACT

"Educational Futuristics," a pilot instructional module for a foundations of education course, resulted in the compilation of these guidelines. The aim of educational futuristics noted in the introduction is to increase student awareness of trends in the environment and of the impact of choices in the future, as well as to equip students in handling more changes creatively. A rationale for teaching futurists is supplemented by two inquiry strategies and some concepts fundamental to educational futurizers. The contents of the guide include the following: a Year 2000 scenario; an explanation of educational futuristics, of the use of guesstimation and choice trees, of cross-impact matrix extrapolation, and of delphi methodology; and comment on global development education, on future oriented games, and on change and innovation strategies. The chapters review important background material and concepts to be presented along with successful classroom approaches. A list of futurist centers and a short reading list on educational futuristics conclude the guide. (Author/KSM)

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# EDUCATIONAL FUTURISTICS

An Instructional Module In

Education 220: Foundations of Education

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-1974-

# INTRODUCTION

Pre-modern man accepted sameness, tradition and relative changelessness as the basic conditions of his life. His chief aim was simply to survive in the present, with little regard for anticipating future situations. Although social and technological revolutions have radically altered the world in which modern man is living, most formal schooling is still backward looking. A rapid pace of change results in serious dislocations, yet we still study much the same content as did our forefathers. The result is that many events are unexpected and threatening to us.

Futurists argue that schooling need not be confined to traditional approaches. Human destiny isn't fixed or unalterable, and through futurism or futurology, mankind can learn to work toward desireable goals. Futurists believe that human choices can and do alter the directions of many trends. By careful planning and thoughtful decision making, people participate in shaping their own future.

The future can be conceived of in two categories. The next decade, the world of the 1980's let's say, is the immediate or short range future. Admittedly, most of its dynamics are already fairly well set by decisions that have already been made. But by studying the trends in the immediate future, we can better anticipate events and prepare ourselves to cope with them creatively. There is also the long-range future of thirty to fifty years from now. Here the range of options is far more flexible and the rationale for considering them is to make possible better personal choices and public policies.

The large scale patterns that operate in our world, such as population trends, economic factors and the degree and mode of mobility form what are called <u>determinative processes</u>. The <u>normative processes</u> are ones that are derived from attitudes, goals, needs and values of persons, social groups and institutions. These beliefs and commitments also help to shape the determinative processes when they are expressed in actions. <u>Random agents</u> also function within change. Events such as an assassination, a drought or a tornado can't be ignored, although there is a lower probability that they will occur. Futurists term them random agents in making their forecasts.

The aim of futurism isn't either absolute prediction or total control over change. Rather, educational futurists want to increase their students' awareness of the trends that can be discerned in their environment. They hope to increase each person's awareness of the impact that individual and social choices are likely to have in the immediate and long-range future. As a result, students ought to be equipped to handle more changes creatively. They should also be prepared to actively shape policy toward desireable ends.

## Inquiry Strategies

(1) Simulations of the probable style of life in the year 2001 strike many people as vague and utopian. Yet, 2001 is a mere twenty-seven years away from 1974. If we project forward for twenty-seven years we become uncomfortable and fear that we are merely speculating. However, the year 1947, which is twenty-seven years behind us is recent history and nobody hesitates to study or teach about it.

```
                        1974
1947  - - - - - - - - - - + - - - - - - - - - - -  2001
```

Can you explain this difference of logic in our time concepts?

(2) Instructors often claim that they teach the "present". They talk about "current events" and "contemporary literature", for example. But logic tells us that the one thing we can never teach is the present, because it is a passing instant. "Present" oriented teachers are really teaching the immediate or recent past. If factors that are shaping our lives today are worth teaching about, isn't it equally valuable to consider how our actions today will influence our tomorrows?

```
HISTORY        'CURRENT EVENTS'   NOW    SHORT RANGE    LONG RANGE,
          - - - - - - - - - - - - + - - - - - - - - - -
DISTANT PAST    RECENT PAST           IMMEDIATE FUTURE  DISTANT FUTURE
     HAS BEEN                  BEING              BECOMING
```

Design a small future oriented learning experience for students of a particular age.

## SOME LEARNINGS FOR EDUCATIONAL FUTURIZERS

1. KNOWLEDGES

   1.1 General concepts regarding events and trends that bring past acts and situations, the immediate present and the emerging future into relationship.

   1.2 Understanding the terms and operations subsumed in:

   cross-impact matrix
   Delphi forecasting
   lateral and linear thinking
   scenarios
   simulations and gaming
   systems analysis
   trend extrapolation
   values clarification

   1.3 Ability to generalize futuristic ideas and concepts in global perspectives, the American context, community concerns and personal experience.

   1.4 Recognition of the alternatives that are available for education and the schools in the short-term and long-range future.

2. AWARENESS

   2.1 Recognition of how past choices, commitments and actions have had an impact on the present and the future.

   2.2 Appreciation of the areas in which values conflict.

   2.3 Sensitization to ecological considerations and their implications for relevant learning.

   2.4 A worldwide perspective of mankind's problems and needs.

3. SKILLS

   3.1 Capacity to use cross-impact matrices, delphi surveys and other techniques for futurizing.

   3.2 Ability to speculate imaginatively in order to create a scenario, play a role or simulate a potential situation.

   3.3 Have command of the means for designing planning networks and obtaining consensual validation.

"To learn is to change. Education is a process that changes the learner."

George B. Leonard, EDUCATION AND ECSTASY, p. 18.

"The experience of any moment has its horizon. Today's experience, which is not tomorrow's, has in it some hints and implications which are tomorrow on the horizon of today. Each man's experience may be added to by the experience of other men, who are living in his day or have lived before; and so a common world of experience, larger than that of his own observation, can be lived in by each man. But however wide it may be, that common world also has its horizon; and on that horizon new experience is always appearing . . ."

C.D. Burns, PHILOSOPHY, VIII (1933), 31, 301 f. as quoted by Susanne K. Langer, PHILOSOPHY IN A NEW KEY. N.Y.: Mentor, 1942, p. 16 f.

CONTENTS


| | | |
|---|---|---|
| | INTRODUCTION . . . . . | i |
| | SOME LEARNINGS FOR EDUCATIONAL FUTURIZERS . . . . . | iii |
| I. | A YEAR 2000 SCENARIO . . . . . | 1 |
| II. | EXPLORING EDUCATIONAL FUTURISTICS . . | 4 |
| III. | "GUESSTIMATION" AND "CHOICE TREES" . . . . . | 7 |
| IV. | CROSS-IMPACT MATRIX EXTRAPOLATION . . | 10 |
| V. | DELPHI METHODOLOGY . . . . . | 12 |
| VI. | GLOBAL DEVELOPMENT EDUCATION . . . . | 16 |
| VII. | FUTURE ORIENTED GAMES . . . . . | 18 |
| VIII. | CHANGE AND INNOVATION STRATEGIES . . | 19 |
| | NEARBY FUTURIST CENTERS . . . . . | 21 |
| | A SHORT READING LIST ON EDUCATIONAL FUTURISTICS . . . . . | 22 |


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I.

## A YEAR 2001 SCENARIO

It is the year 2001. Our planet was getting overcrowded. Then we began coping with our problems of population explosion, air pollution, waste disposal and dirty rivers. Automated machines now have an important place in everyone's life. They do all sorts of tasks for us now. In fact, we have almost entirely forgotten how to do bothersome daily jobs such as getting our own meals, cleaning house, washing the laundry, mowing the lawn or shoveling snow.

Some scenic areas have been left in their natural state, but the rest of our environment is manmade; produced by science. Modern technology provides artificial food, synthetic energy and even simulated vegetation. We don't use raw materials extracted directly from the earth any more, such as diamonds, petroleum or salt. All of these are now available only in their man-made forms. Human beings also can now program their unborn children, so that the population is regulated and each new person possesses just those qualities that are needed in society. All of the body organs can be replaced with man-made devices, so that human life is no longer a matter of natural chance or the survival of the fittest.

Schools also have changed from what they used to be. Remember having quizzes and all those difficult semester examinations? Can you recall when school life was regulated by bells? Then we used to move around in classes that met for fifty minute periods with a single teacher who did most of the talking. Think back to the old days when we still used conventional textbooks.

No more! Everyone now has an instructional terminal at home where any information that is wanted can be dialed. Learning networks make it possible to contact other people who have similar interests or specialized competencies. Compulsory schooling is a thing of the past, and all citizens merely have to demonstrate that they possess the basic skills. Their tax monies provide them with life-long learning opportunities. Many of the old universities and school buildings are now open learning centers providing everyone with

access to instruction and chances to interact with other learners. Every community now has free cooperative care and recreational centers so that all the children are well looked after and nobody has to be tied to the home unless they wish to be. Most people, however, no longer belong to nuclear families, but have either joined extended families or live in communes.

## Inquiry Strategy

Four task forces have been set up to analyze and evaluate the situation in 2001.

Intellectuals: These are the abstract thinkers who stress rational thought. Ideas and concepts are very important to them. They often devise ideologies, but they are usually society's "expressive elite" rather than the people who directly have power themselves.

Scientific Specialists: These are the "high level manpower" that either does pure research or makes practical applications of research findings to the technology. Seldom are they on the front lines of power, but they do advise the decision makers and therefore directly shape social policies. They usually know a great deal about a fairly limited field of knowledge.

Managers and Entrepreneurs: Persons of this type wield great power as policy makers and evaluators of performance. Frequently they have effective control over extensive capital, resources and manpower, but they are usually advised by the scientific specialists and intellectuals.

Common citizens: These are the so-called "average people" whose sole power is that there are so many of them. The social direction comes from the three elite groups, but the mass of the society wants to be sure that their needs and preferences are met.

In your role as an intellectual, scientific specialist, manager, or common citizen:

(1) Identify the value conflicts that will be experienced in 2001. Explain the basis on which you predict them.

(2) How must people be prepared or re-educated in order to cope with conditions in 2001?

(3) What aspects of the 2001 scenario seem desireable to you? Which do you consider undesireable? Why?

(4) What trends and sequences of events might produce the outcomes that are sketched in the scenario? How could these be altered or changed?

# A 2001 COMMUNITY

You have volunteered to help design a completely new community. It is up to you and the other members of your task force to plan living conditions for 10,000 human beings. You have to decide what life will be like in this new town. Will it be located in Connecticut? Somewhere else in the United States? Elsewhere in the world? On a stellar satellite?

(1) How will the inhabitants of the community be selected?

Age. Sex. Race. Skill. Socio-economic. Interest. Compatibility.

(2) What style of community life do you envision?

2.1 What kinds of work will be done? What will the forms of labor be?

2.2 What modes of ownership will prevail?

2.3 What kinds of production and levels of consumption will be encouraged?

2.4 What types of play and recreation will the community provide?

(3) How will relations between members of the community be structured?

3.1 What will the intimate living units be like?

3.2 How do children receive nurture in the community?

3.3 How are the needs of the elderly or infirm met?

(4) What will the new community look like?

4.1 How much territory will it occupy?

4.2 What facilities will it have?

4.3 Describe its institutions such as:

banks
churches
courts
schools

(5) How will the community be governed?

5.1 Who participates in making community policies?

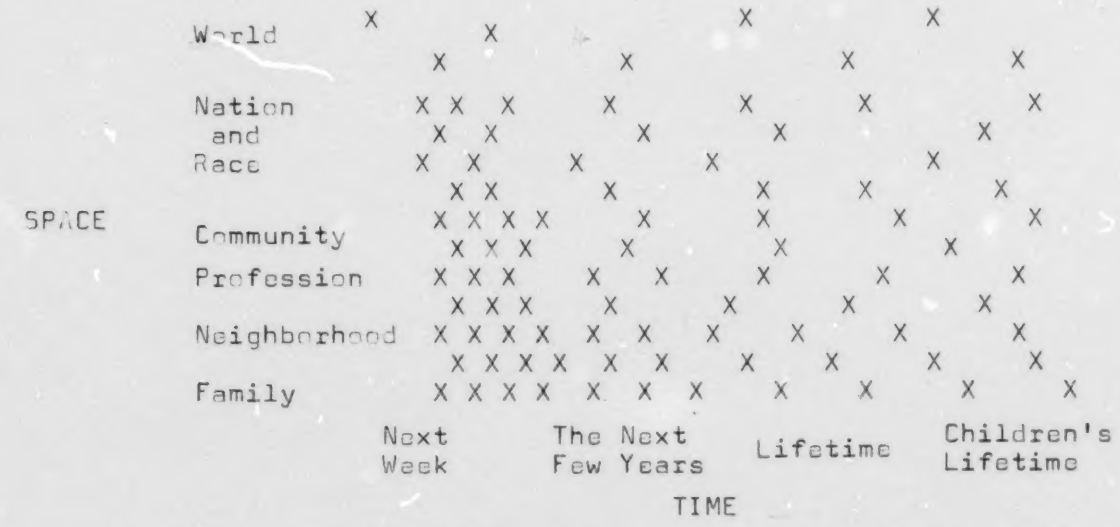
5.2 How is social order maintained? Is there a police force?

5.3 How does the community provide for its defense? Is there an army?

II.

## EXPLORING EDUCATIONAL FUTURISTICS

There are three reasons for inviting students who are studying education or preparing to be professional educators to study a module about the future. First, learning and teaching are social activities, but most people have very short-range space and time perspectives.




It is important that educators, themselves, widen their space and time concepts, so that they can deal with the dynamics of change all around them. Formal institutions of education have always been expected to preserve the past heritage of the race and to transmit these social traditions to the younger generations. As a result, schools became bastions of culture lag. They teach "how it was", not either "how it is" or "how it will be." But one educator writes, " . . . we are suggesting to teachers that they should no longer try to shape children to fit a static world . . . but should help them prepare themselves for a wide range of possible futures, and also (to) shape the future the way they want it to go."[1] Just within the last century, technology has made tremendous progress.

1865 - 1965[2]

| | |
|---|---|
| Speed of Travel | 100 times faster |
| Energy resources | 1,000 times greater |
| Speed of handling data | 10,000 times faster |
| Power of weapons | 1,000,000 times greater |
| Speed of communication | 10,000,000 times faster |

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1 James M. Oswald, "Looking into the Future", INSTRUCTOR, August/September, 1973. This issue contains a section on educational futuristics.

2 John Platt, "What Must We Do?", SCIENCE 28, Nov. 1969, 115-121.

Given the speed of these changes and their revolutionary impact on every sphere of life, it is no longer a rational option to simply teach the traditional skills and induct youth into the past.

Second, we explore educational futuristics in order to get clues about how to do future oriented teaching. Many of our conventional theories and methods of instruction aren't future oriented. We need to develop a perspective of reality that utilizes past - present - future tenses rather than being focused almost exclusively backward. We need to encourage non-linear as well as linear thinking. Just as the impact of past events is felt today; so too will tomorrow reflect today's world and yet be distinctively different from it. Understanding the changes that are taking place and coping with this flux requires some new assumptions and attitudes. Our beliefs, commitments and values will be challenged. Future looking educators need to have ideas and techniques with which to encourage learners to entertain new modes of perception, evolve concepts of change and continuity, evolution and revolution, consensus and conflict, process and goals.

Third, just as normative and techological dynamics are rapidly changing every other realm of society, so too are they affecting educational institutions. What constitutes the future of education?

(1) Changes in attitudes, values and actions
(2) Changes in the ways that persons and groups learn
(3) Changes in content
(4) Changes in instructional processes
(5) Changes in how time is scheduled
(6) Changes in the roles of students, teachers and other people who are involved in learning
(7) Changes in resources and funding
(8) Changes in technology
(9) Changes in the motives and rewards for schooling
(10) Changes in the product of education

Many of the "principles of education" taught as facts only a generation ago have now been exploded. Policies that were acceptable in the late 1960's are archaic now. A great deal of instructional methodology has been outmoded in the last five years! Studying the future in education aims at giving prospective teachers an opportunity to appreciate the alternatives that are open to them. It should also equip them better to anticipate the emerging trends in the educational professions.

## INQUIRY STRATEGIES

### A FUTURES THINK TANK

One local elementary school devoted part of a day to future thinking and speculation. The kindergarten children had as many ideas as the fourth graders. Try some of their queries in your own discussion group.

(1) What does "future" mean? When is the future?

(2) Will you be living in the future? How old will you be in 2000?

(3) In the future, what things will be the same as they are now? What things will be different?

(4) Are there problems right now which affect the future?

(5) Are these local, regional, national or world problems?

(6) What are some possible solutions to the problems?

(7) Let's take an area at a time and think about how it might be changed.

How about houses and other habitations?

What about transportation? Land? Sea? Air?

How about food? What kind? How much?

What will school be like?

(8) What kinds of future jobs will there be?

(9) What work and play would you like to do in the future?

(10) Future Words: Ask the children to think of words they'll hear a lot in the future. These might be offered - cybernetics, glocal society, causality, stability, conjecture, planning, progress, development, forecasting, manageability, quantitative - qualitative change, zero change, step change, exponential change . . .

### AN OCCUPATIONAL FUTURES GAME

Each group will receive a simple device and participants will take turns at spinning the pointer. The player will tell what he anticipates as the future prospects of the particular occupation on which the pointer lands. If it lands on a line, the player can select the career on either side. If several players have already talked about the vocation on which the pointer lands, the player may spin again.

A facilitator in each group can ask questions such as:

Will this occupation change at all in the next decade?
How extensively will in change before the year 2000?
Is it likely to expand and improve, or be phased out and be combined with some other activity?
What events might have a major impact on this occupation?
How are people prepared to enter this vocation now?
What education is likely to be required for it ten years from now?
Can the people with the skills needed for this job easily adapt them to other occupations?

## III.

## "GUESSTIMATION" AND "CHOICE TREES"

At a 1971 conference on the future of Connecticut called "Focus on the '80's" Horace H. Brown identified some physical and demographic factors which set parameters and influence the future of our state. Connecticut has an area of only about 5,000 square miles and it lacks extensive natural resources. On the other hand, it is located in the midst of the "BoWash" megalopolis, yet still has many scenic areas. Its population of 3,032,000 has doubled since 1930! However, the rate of population increase dropped from 24% during the 1950-1960 decade to 19.6% in the last ten years. The density of population rose from 521 to 623 persons per square mile, ranging from 9,583 persons / sq. mile in Bridgeport, Connecticut's largest city, to 15 / sq. mile in Union, its smallest town. 11% of the land in Connecticut is devoted to urban uses, 16% is used for residences and agricultural pursuits, while 73% is wooded. A major shift in the style of housing is shown by the new construction begun in 1970. In that year, there were 14,747 apartment units built as against only about 7,000 single family dwellings.

David Pinsky gave the following trend data at the same conference.

| 1955 | | 1970 |
|---|---|---|
| 718 | alcoholics | 4,716 |
| 3,860 | mental commitments | 13,000 |
| 5 | drug addicts | 19,021 |

When Pinsky spoke, 120,000 people were out of work in Connecticut, while at the same time, a large block of youths were entering the labor market. Pinsky projects that at the beginning of the 1980's, some 61,000 Connecticut young people will be going out to get their first jobs each year. However, the birthrate in the state is now down to the depression level, so this should taper off to 50,000. Although there is an average increase of jobs in Connecticut of about 10,000 a year, the 1980's will probably continue to be an era of un- and under-employment in our state.

The jobs that are available in Connecticut have mainly been in manufacturing. There were 440,000 of them in 1950, but there are less than 401,000 at present. In 1950, 80% of the people employed in Connecticut were production workers. Today 60% are. By 1980 this will drop to 40%! 56,000 people now work in the construction industry, but due to increased productivity this is forecaste to remain about even. Due to automatation, the communication and transportation fields are contracting. At present, the expanding fields are the technical and professional services, government and trade. But almost all of these jobs require college level preparation or more. In 1965, 6,000 Connecticut residents got in-state degrees. By 1970 this had risen to 11,000 and it peaked in 1971 at 14,000. The trend, however, seems to be a leveling off, not a radical drop in higher education.

For us, and for our state, there are twin issues.

(1) How can we maintain a high standard of living (livelihood)

(2) How can we obtain a high quality of life (liveability)

This involves identifying and analyzing the issues before us, setting personal and social goals, reviewing the alternative courses of action open to us, and generating the human/social resources that we can commit to the projects that we choose to inaugurate.

## INQUIRY STRATEGIES

### UTOPIAN FUTURIZING

A recording of John Lennon's "Imagine" will be played and copies of its lyrics distributed to you. After listening to this song and reflecting on the concepts that it contains . . .

1. Identify the elements of the utopia that Lennon sings about. You should be able to locate seven or eight realms that he imagines will be changed from the present.
2. Taking off from these suggestions, can you "Imagine" some other desireable social social changes in the future? "Brain storm" long enough to articulate and set some of these down.
3. Now, analyze the ideal states which Lennon and your own group have projected.
   a. What kind of life style do they imply?
   b. What are the implications of each change for all the others? In other words, what interrelationships do you anticipate among them?
   c. What kinds of education would contribute to creating these ideal states? How does this differ from schooling at present?

### PERSONAL ANALOGIES

As individuals, we can recognize continuity and change in our personal lives.

1. Sketch your own psycho-mental-emotional-physiological development to the point where you can locate your own personal "stages of growth". Compare these with the "stages of growth" that other members of your group perceived in themselves. If you wish to, you could compare these with the "stages of growth" described by Bruner, Gessell, Piaget, and Montessori.

2. What do you expect to be like in 1984?

   a. Physically
   b. Mentally
   c. Experientially
   d. Professionally
   e. Culturally

3. What are the causal factors that you anticipate affecting your development during the next decade? Which of these are items of personal choice, and which of them are social trends over which an individual has very little control?

A FUTURES WHEEL

The "Futures Wheel" is a type of a choice tree originated by Jerry Glenn of the Program for the Study of the Future at the University of Massachusetts.[1] One of these wheels can show the causes of an event, while a second one charts the theoretical paths that the same event will take in the future. As it becomes more complex and the events are more closely interrelated, students can grasp the concept of multicausality better.

Take a trend from the projections for the 1980's in Connecticut, for example.

URBAN DECLINE, EXURBAN GROWTH

DECLINE OF AUTOMOBILE

SERVICE JOBS

PUBLIC TRANSPORTATION FOR LONGER TRIPS

MORE OUTDOOR RECREATION

GREATER POPULATION DISPERSAL

EXPANDING LOCAL ROAD NETWORKS

LESS POLLUTION

LESS FACTORIES

MORE HOME BASED JOBS

FEWER PRODUCTION LINES

HIGHER QUALITY STANDARDS

MORE MODERATE CONSUMPTION

FEWER PRODUCTION JOBS

LESS CONFORMITY

MORE TOLERANCE OF DIVERSITY

LEVELLING OF ENERGY USE

DIMINISHED TECHNICAL TRAINING.

FOUR DAY WORK WEEK

STRESS ON SIMPLER STYLE OF LIFE

MORE HUMANISTIC STUDIES

TIME FOR FAMILY GARDENS AND HOME CHORES

CONSPICOUS CONSUMPTION CONSIDERED IMMORAL

NEW STRESS ON LEARNING FOR LEISURE

NEW INTEREST IN PERSONAL HAND SKILLS

Devise your own "Futures Wheel" either as a personal forecast of yourself over the next decade, or a projection regarding some aspect of life in your home community or state.

Present your "Futures Wheel" to others in your group, explaining your "guesstimations" to them. Check the logic of your anticipations within each ring of the wheel to see if any consistent pattern can be discerned. You may also build in alternative options.

IV.

## CROSS-IMPACT MATRIX EXTRAPOLATION

Some means of anticipating upcoming events and trends underlies all futurizing. There are six main methods that most futurists employ in their work.[1]

The most traditional and simplest approach to futurizing is to locate a reputable expert or authority to provide data and give opinions about the subject being studied. This AUTHORTY METHOD is still widely used, but its disadvantages are that several equally reputable experts often disagree and that any specialist's assumptions or beliefs may influence his choice of data and the estimates he makes based on it.

A second way to futurize is to use the POLLING METHOD, in which a group of experts or judges is used instead of any single source. This method may take the form of a public opinion poll, a panel of experts, or a task force; but the most extensively applied variety of polling is the "Delphi Survey". It was developed by Theodore Gordon and Olaf Helmer at the RAND Corporation. As Delphi methodology has many educational applications, Section V is devoted to learning about this technique.

The PROJECTION METHOD first requires us to carefully describe the present situation. Then, some explicit assumptions about future developments and rates of change must be made. Finally, these assumptions are stated and then applied to the base description in order to produce a projection. Often, more than one projection for an area or topic is generated; based on alternative assumptions of different circumstances. Projections are usually made about quantitative matters such as energy consumption or population growth, but they can also be qualitative. Shifts in personal beliefs or changes in social values can also be the subject of projections.

Projections are often confused with forecasting, but the FORECAST METHOD is actually a separate technique. A projection is simply the estimate of outcomes if the assumptions on which it is based hold true. However, no attempt is made to measure the probability that these stated assumptions actually will be operative. When evidence regarding these probabilities is added to a projection, it has then become a forecast.

Conjecture is the logical, reasoned and systematic effort to identify and describe possible significant innovations and changes relative to future studies. An innovation can be defined as altering a policy or practice, while maintaining the basic pattern or framework within which it occurs. Change is a more radical phenomenon, that affects the mental construct or behavioral matrix itself.

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1 This description is based on David C. Miller and Ronald Hunt, A GRADUATE-LEVEL SURVEY OF FUTURES STUDIES: A CURRICULUM DEVELOPMENT PROJECT. San Jose: California State University, 1972, pp. A 33-38.

Conjectures about the future concern both innovation and change. We can apply QUALITATIVE CONJECTURE METHODS such as Role Playing, Simulations, Scenarios, Future Histories and Tangible Shapes to realms where the content can't be counted or measured: feelings, fine arts, interests, values, words . . . A little simulation was demonstrated in Section I. Section VII will be concerned with games as another qualitative method of conjecturing.

QUANTITATIVE CONJECTURE METHODOLOGY is the focus of this section. A type of choice tree has already been demonstrated and Modelling will be discussed later. Here we will concentrate on Cross-Impact Matrix extrapolation. A Cross-Impact Matrix is just a table on which the possible future developments and events are catalogued. These are written once to the left of the horizontal rows across the page and again at the bottom, beneath the vertical columns. At each intersection on the matrix, the futurizer writes an estimate of the impact that each trend will have on the other. The purpose of this exercise is to identify the most significant future interactions for further consideration and study.

## INQUIRY STRATEGIES

### CROSS IMPACT INTERPRETATION

Read Ray Bradbury, "A Sound of Thunder", SOCIAL EDUCATION, August 1971, 875-881.

Analyze the elements that are operative in the story. Write qualitative factors to the left and quantitative ones at the bottom of a Cross-Impact Matrix. Then, interpret the impact that each factor is most likely to have on the other ones.

### A PERSONAL MATRIX

Beginning with 1974, write the biennial dates opposite horizontal rows for twenty years, until 1994. Then, at the bottom of the vertical columns, write a dozen on-going influences that may affect you such as parents, travel, friends, reading, school, employment, marriage, children . . . This time, conjecture how each factor will influence you over the twenty year span of time.

### FORECASTING SCHOOL TRENDS

Take an educational institution with which you are familiar. Prepare a Cross-Impact Matrix, listing external factors in the community that will probably affect it by 1980 to the left of the horizontal rows. List internal factors within the organization itself that will probably affect it by 1980 beneath the horizontal columns. You should then be able to speculate about the interactions between the external and internal factors and generate a forecast of future developments.

V.

## DELPHI METHODOLOGY[1]

Most decisionmakers utilize expert advice in forming their judgment. Where the question being examined is so complex and involves such obscure interrelationships that no single person could be expected to be expert in the many disciplines required, the traditional approach to the answer is the seek a consensus among experts through open discussion or a conference. However, joint committee activity often introduces certain undesireable psychological factors, "such as specious persuasion, unwillingness to abandon publicly expressed opinions, and the bandwagon effect of majority opinion." [2]

The Delphi technique makes it possible to avoid some of these difficulties because the experts involved exchange their opinions anonymously and through an intermediary, who controls the feedback of opinion in subsequent rounds of the inquiry. It has been found in previous studies of this type that the Delphi process - involving anonymity, iteration, and controlled feedback - tends to produce a converging group consensus.

In a typical Delphi investigation, the participants are sent a series of questionnaires through the mail. In the first, they might be asked to provide their judgment as to likely dates of occurence of a group of events or developments. The collated reponses normally reveal a spread of opinions; these data are presented to the respondents in a second questionnaire. In this round, the respondents are given an opportunity to revise their estimates in light of the group responses, and those participants whose estimates have fallen earlier or later than those of the majority are asked to provide reasons for their position. These reasons, as well as new estimates for the group as a whole, are collated and fed back to the respondents on the third questionnaire. They are again asked to reassess their earlier estimates in view of the new group response and reasons provided for early and late dates.

The Delphi method has proven useful for long-range forecasting of expected technological and societal developments. Several corporations and government agencies have conducted future-oriented Delphi studies concerned with such subjects as political alliances, technological potentials and economic indices. Results generally have been satisfactory; that is, in many cases a reasonable consensus seems to have been achieved and the potential developments which are described provided a basis for subsequent planning, action and analysis.

Even though this technique has been used with some success, it should not be interpreted as a device that produces "truth about the future." The Delphi methodology is designed to produce consensus judgments in inexact fields; it would be a mistake to consider such judgments as complete or precise descriptions about the future.

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[1] Theodore J. Gordon and Robert H. Ament. FORECASTS OF SOME TECHNOLOGICAL AND SCIENTIFIC DEVELOPMENTS AND THEIR SOCIETAL CONSEQUENCES. IFF Report R-6. Middletown: Institute for the Future, 1969.

[2] N.C. Dalkey and O. Helmer. "An Experimental Application of the Delphi Method to the Use of Experts", MANAGEMENT SCIENCE 9(3), April 1963.

Respondent No. _____

# A DELPHI SURVEY OF ALTERNATIVE EDUCATIONAL FUTURES

Instructions: On the first line after each option please evaluate it. Mark a + if you consider it desireable; a - if you view it as undesireable, and an 0 if you are undecided about it. Then, on the second line, write the date when you estimate the policy or practice will be instituted. You may use whichever of seven time predictions seems best: 1975, 1985, 1995, 2005, 2015 2025 or NEVER.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

1. Social simulations will become common at all levels of schooling. The students may live in a "feudal village" for a week when they study medieval history or actually participate in the decision making in some corporate enterprize to learn math and economics.

   Evaluation _____ Time _____

2. Packaged course materials and teaching syllabi will always become terminal after they have been used with four consecutive groups of learners to insure a contemporary and relevant approach to instruction.

   Evaluation _____ Time _____

3. Instructional programs on common human concerns such as peer group subcultures, the human life cycle, family life, urban planning, war/peace studies and ethnic identity will be taught in all schools.

   Evaluation _____ Time _____

4. Every public school system in the United States will have access to sophisticated computer services and employ at least one professional educational programmer to utilize them.

   Evaluation _____ Time _____

5. Standard curricula will be dropped by all public schools as new systems which are based on the careful assessment of individual needs and a personal diagnosis of each learner's strengths and weaknesses are implemented.

   Evaluation _____ Time _____

6. Strict attendance requirements at secondary and higher schools will be replaced with many options for learning through activities outside of school such as academically oriented job experiences, travel, special research projects or service in the community.

   Evaluation _____ Time _____

7. Letter (ABCDF) or number grades will be abandoned by schools on every level in favor of more open appraisal systems such as meeting competency criteria, contract learning, variable credits and credit or no-record.

   Evaluation _____ Time _____

8. Instructional formats will become module on all levels instead of today's standard term or year long courses, and there will be much more flexibility as to style (group interaction, peer teaching, media instruction and programmed learning will be as common as lectures and textbooks are today.)

   Evaluation _____ Time _____

9. Teachers will universally be evaluated by their students as well as by community and professional peer group referees.

Evaluation _____ Time _____

10. Every school district in the United States is required to set aside a minimum of 10% of its funds in order to support alternat- public learning centers. These are voluntary, open to all citizens in the district and provide optional learning routes in addition to those that are made available in the conventional public schools.

Evaluation _____ Time _____

11. Outside resource people and other paraprofessionals from the community come to outnumber the certified professional teachers in the public schools in most American towns and cities.

Evaluation _____ Time _____

12. Learning by media (audio-recordings, TV, video-tape, film, programmed instructional machines . . . ) occupies at least a fourth of the school time of American students at every level.

Evaluation _____ Time _____

13. Tenure is phased out of schools and universities. No new faculty are hired except those whose contracts specify that they agree not to receive tenure.

Evaluation _____ Time _____

14. A ten year residence limit is applied to all professional educators: administrators, teachers and professors. All faculty are expected to teach in three or four institutions in the course of their careers, and their retirement programs are designed to make this possible.

Evaluation _____ Time _____

15. All career preparation that requires advanced study is decided on the basis of scientifically projected manpower needs and the employment potential that people who complete the programs will have.

Evaluation _____ Time _____

16. School services such as food, remediation and counseling are provided by more advanced students who are interested in fields such as resurant management, special education or human relations and who work under the clinical supervision of competent professionals.

Evaluation _____ Time _____

17. Departments of instruction at all institutionsof learning become "task oriented" instead of being centered on a single academic area or discipline. For example, a department of "ecology" may work to raise the awareness of the community and reduce the destructive exploitation of nature, or a "world order" department might examine issues in the global society and strive to educate the public regarding trends in this realm.

Evaluation _____ Time _____

18. School management becomes the specialization of business administrators; principals and superintendents now being selected solely on the basis of their qualifications as educators, experts in human relations, and curriculum developers.

Evaluation _____ Time _____

19. All educational institutions at every level are linked into cross-cultural and international networks so that faculty, resources and materials can be exchanged, varying perspectives taught and students will have access to a wider range of experiences.

Evaluation _____ Time _____

20. Citizens acquire "educational security" which is similar to today's "social security". It enables them to have additional learning of many kinds throughout their lives. All degrees and other credentials now must be renewed every ten years.

Evaluation _____ Time _____

21. Every learner has access to bi-lingual instruction in which an important portion of the entire program is taught in some language other than his mother tongue. For example, native speakers of English may study in Chinese, Spanish or Russian half of each day, while a native speaker of French or Portuguese in New England would study half in his mother tongue and half in English.

Evaluation _____ Time _____

22. All educational institutions stay open for twelve to eighteen hours a day, six days a week, on a year-round basis. Learners choose the times that they prefer to attend them, providing greater flexibility on a day to day basis and many options for vacation times.

Evaluation _____ Time _____

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Will you kindly provide some information which will remain anonymous and will be reported only as group averages and generalized data.

How much experience as a professional educator have you had?

None ( )

Practice Teaching ( )

Less than two years ( )

More than two years ( )

What level or field is your particular interest?

Pre-school (early childhood) ( )

Elementary ( )

Middle School ( )

Secondary ( )

Community College ( )

University ( )

Special Education ( )

Guidance-Counseling ( )

Administration-Supervision ( )

Humanities-Social Sciences ( )

Math-Sciences ( )

VI.

## GLOBAL DEVELOPMENT EDUCATION

One immediate and pressing application of futuristics is instruction aimed at worldwide development. Humanity is now divided between a one-fourth minority enjoying relative affluence, and the three-fourths majority who live on the brink of poverty. Many Americans have to resort to reducing diets in order to keep in shape, while most other people are suffering from undernourishment. The energy crisis suddenly made us realize that our nation, alone, has been gobbling up more than 30% of the whole world's fuel supply each year!

The proclamation of the First Development Decade in 1960 was intended to mitigate these problems. In fact, the five per cent or better growth in their gross national products which many underdeveloped and developing nations achieved was a great accomplishment. In Asia the "Green Revolution" often re-educated villagers and radically changed their farming practices. As a result, the supplies of food were increased. But it has now become apparent that national economic averages cover up extensive areas of impoverishment. In country after country, economic development has well served that portion of the population that controls the resources, manages production and learning, and directs the national policy. In lands such as Brazil, Ceylon, Egypt, India, Iran, Mexico and Turkey, however, extensive national development plans and the introduction of a very sophisticated technology haven't relieved the hunger and poverty of the villagers who make up most of the population..At the same time, affluent industrialized societies have recently become aware that there are good-sized minorities within their own borders who aren't benefitting from the general social advancement. In the case of the United States these disadvantaged groups include AmerInds, Appalachian whites, southern and many inner city Blacks, and Chicanos and Puerto Rican Americans.

Development, at home or overseas, can never simply consist of pure economic growth. Unfortunately, the rewards of productivity are seldom equitably distributed. Also, well-being is a matter of mind as well as of condition. Many developing peoples are in the process experiencing a new ethnic pride and cultural renaissance which is just as important as their physical progress.

Yet, developing resources can't be ignored, because all national advancement depends to some extent on trade. Poor societies have to earn foreign exchange in order to buy the tools and manufactured products that they need. Rich countries trade to get the raw materials for their industries and sell their excess production. American foreign aid has never been purely philanthropic, but rather reflects these basic facts. It geared toward the defense or reconstruction of other societies so that they can become our trading partners.

Nevertheless, the United States now appears to be moving toward less international involvement. Our domestic programs to implement social justice and increase welfare have been reduced. With our generally comfortable standard of living, it is morally indefensible for Americans to ignor human beings in need all around them. American military and political power gives us the responsibility to find the

means of helping others. Often, the means involve education.

Yet our schools are teaching numerical skills and reading in preference to the understandings needed for cross-cultural empathy. We learn "consumer education" instead of concern for other people who are hungry and poor. Few schools provide opportunities to tackle the practical tasks of community service. That is what global development education is all about . . .[1] It is not adding another armchair discipline to the packed curriculum, but rather transforming futurizing into action aimed at building a new and better world. It will convey a new wholistic perspective so that learners can be less fragmented and think of themselves as world citizens as well as Americans. It will permeate all that is taught, and not be confined just to the humanities or social studies. And good global development education will link concepts with deeds so that the learners begin to do what they talk about.[2]

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[1] See, "Development: New Approaches", INTERCOM 69, April 1972 and "Teaching Toward Global Perspectives", INTERCOM 73, September 1973 for extensive lists of instructional materials, media resources and many teaching suggestions.

[2] Another exposition of this theme is Chester M. Pierce, "Becoming Planetary Citizens: A Quest for Meaning", CHILDHOOD EDUCATION 49, November 1972, 58-64.

## INQUIRY STRATEGIES

(1) Keep track of what you eat for a twenty-four hour period. Look up the caloric and protein value of the food you consumed. Then compare yourintake with the average calories and protein amounts that Africans, Asians, Latin Americans and Middle Easterners get.

   a. What are your conclusions?
   b. Prepare a projection of how greater equity in food could be achieved in global terms.

(2) One way of conceiving of the development predicament is to use the paradigm: First World, Second World, Third World.

   a. Where are these three "worlds" located?
   b. What are the basic characteristics of each "world"?
   c. Identify some crucial problems that each world will be facing in the next decade. . . Before the year 2000.

(3) The relationships between education and manpower development are often stressed.

   a. Identify the aspects of education that contribute to manpower.
   b. List some of the basic manpower needs of any developing society.
   c. Make a Cross-Impact Matrix to explore the various interactions between these areas.

VII.

## FUTURE ORIENTED GAMES [1]

A GAME is a contest among opponents who share some common objective whose attainment is regulated by rules that have been agreed on. Most games have some kind of a scoring system, and tokens are often used to play them. As these common characteristics indicate, the educational value of gaming is that the processes contain so many elements that are also found in society. By participating in a learning game, a student is actually experiencing aspects in life situations. In fact, normal human interactions were recently characterized as "The Games We Play".

Games are closely related to SIMULATIONS, but the latter are less thoroughly structured. A simulation is technically a functional model of some real or imagined; physical or social situation. A SCENARIO is another variety of learning exercise that takes the form of a short, unstructured sketch. Scenarios are often transformed into SITUATIONAL EXERCISES by being prepared as brief skits. Then "actors" who have had an advance opportunity to practice their parts are used. Each person is given only a very general idea about the setting. He has to rely on his personal knowledge, imagination and wits in order to think and act on his feet. In a situational exercise, each participant plays himself and reacts to his personal perception of the given context.

But a ROLE PLAY castes each person who takes part in it as a well-structured character, different from his normal personality. In order to initiate the process, at least a tentative script may be provided in order to get the role playing under way.

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[1] A more detailed explanation of gaming is provided in Alice Kaplan Gordon, GAMES FOR GROWTH. Palo Alto: Science Research Associates, Inc., 1970.

### INQUIRY STRATEGIES

(1) Some instructional games and simulations will be tried out by the groups in our Educational Futuristics module.

   a. What happened during the game or simulation?
   b. Who "won" and who "lost"?
   c. What were the scope and objectives of the game?
   d. How accurate or believeable did you find it?
   e. Would you change it or improve it?

(2) Write up a short, future oriented situational exercise or role play that can be used in class. Analyze the ones that are done, asking:
   a. What issue or problem was under consideration?
   b. How did each person who participated perceive his situation?
   c. What was each individual trying to accomplish?
   d. To what extent was each person's behavior appropriate for the task that he faced?

VIII.

## CHANGE AND INNOVATION STRATEGIES [1]

A weakness in a great deal of futurizing is the lack of any coherent notion how change is initiated or innovations begun. Schools are social structures, with organizational similarities to society's other continuing institutions. People are able to take part in associated activities by joining them. And their associations create intertwining patterns or networks of relationships. It is these networks that are affected when change or innovation takesplace.

In order to have much impact on the associational networks that function in any particular educational institution, a person has to be able to analyze their dynamics. First, what is the actual FUNCTION of a particular network? By this we mean, what characteristic action does it take within the larger structure of the school and community? Second, what kind of ENERGY does it possess? How can it act and how is it likely to be acted upon? Finally, what POWER does this network manifest? Concretely, to what extent is it able to influence school philosophy, policy or practices? Can it mobilize community backing for change or innovation? By applying these criteria, it should be possible to identify concentrations of energy and power within the institution and in the society surrounding it. Lasting changes and meaningful innovations come when the various sources of energy have a positive influence on the power groups.

The direction that any institution takes is likely to be determined by the purposes and values that dominate it. A PURPOSE is the expressed intention of persons and the general social structure to act in certain specific ways. In schools, purposes are often expressed or implied in policy statements, minutes or syllabi. VALUES always underlie purposes. They constitute people's subjective attitudes about the worth of things and processes. It is much more difficult to ascertain what values reign in the operation of a school, than it is to find stated purposes. But value clues are usually found in the institution's philosophy. They can be surmised from the ways that people interact with each other. Educational futurists try to recognize purposes and values, and aim at encouraging **thought about** what their purposes and values actually are.

This is by no means an easy task, but at least five pertinent questions can be raised.

(1) Are the <u>subject-matters</u> that are being taught or learned appropriate to the aims of the school?

(2) Does the school possess adequate <u>material</u> (physical resources such as equipment, funds, plant . . . ) to meet its purposes?

(3) Is the <u>organization</u> of the school consistent with its stated purposes and the values of those who are associated with it?

(4) Do things in the school actually <u>function</u> the way that it is purported that they do?

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[1] This treatment has utilized the <u>Cowley Taxonomy for the Study of Social Institutions</u>.

(5) What sanctions or controls direct, regulate or restrain behavior in the school and community? Are they desireable?

It is often helpful to identify the IMAGES that symbolize individuals' basic attitudes and orientations. These may function as IDEOLOGIES, which are the intellectual means of persuading other people to accept a particular decision or program. In order to make a change, new images and a different ideology may be needed.

Futurizers are always dealing with three types of problems. Some issues are inherent, arising from the essential nature of the institution. For instance, American public schools are political and this is the source of many concerns of educators. Obviously, inherent problems are amenable only to radical institutional change, although innovations may help to meliorate them somewhat. Current problems are the questions of the moment or day. They demand major attention at a particular time, and their danger is that so much energy will be devoted to solving immediate crises that little will be available to anticipate emergent problems. These are concerns that will become crucial in the near or distant future. Most organizations and societies have not been able to give much attention to their emergent problems until they become current. And it is then often too late to do much to meet them creatively.

## INQUIRY STRATEGIES

(1) By observing some learning group with which you are familiar, find out how its norms have been established. What is the basis of the expectations about which the group has mutually agreed? Whose purposes and values have shaped this normative situation? Where is the focus of power? What controls are used to maintain the group norms?

(2) Sketch, in a single concise paragraph, the ways in which a particular school functions. Then by applying the five pertinent questions, probe into its subject-matters, material, organization, operation and controls. On the basis of your analysis; make a prediction of the school's probable futures (projecting) and also describe the future that you would prefer for it (envisioning).

## NEARBY FUTURIST CENTERS

CENTER FOR WAR/PEACE STUDIES 218 East 18th Street, New York, 10003.

Sponsored by the New York Friends Group, this organization publishes INTERCOM, and discussion, study and resources guide on many aspects of transcultural perspectives, conflict management, and development priorities for the future. Its materials are geared to class and school use.

EARTHRISE P.O. Box 120, Annex Station, Providence, R.I. 02901

Earthrise is a tax-exempt, educational corporation that does futures research, education and design. It publishes a newsletter and conducts futures laboratories.

EDUCATIONAL POLICY RESEARCH CENTER 1206 Harrison St., Syracuse, N.Y. 13210.

This is the nearest center to us that projects trends and options for educational institutions. Begun in 1967, it is funded under Title IV and issues publications such as Notes on the Future of Education.

FUTURE'S GROUP 124 Hebron Avenue, Glastonbury, Ct. 06033.

Development and projection studies are carried on by this private group of futurists under the direction of Theodore Gordon.

INSTITUTE FOR WORLD ORDER 11 West 42nd Street, New York, N.Y. 10003

Monographs and classroom materials geared to the issues of world order and the peaceful resolution of international conflicts within the law are produced by this organization, which also sponsors conferences and workshops.

PROJECT ON THE PREDICTAMENT OF MANKIND Massachusetts Institute of Technology, Cambridge, MA.

A comprehensive computer simulation for investigating mankind's future for the group known as "The Club of Rome", the project is directed by Dennis L. Meadows. The Limits of Growth describing this study came out in 1972.

PROGRAM FOR THE STUDY OF THE FUTURE OF EDUCATION School of Education, University of Massachusetts, Amherst, MA. 01002

Many relations between education and futuristics are explored at this Center directed by Chris Dede. Courses in the field are offered, several publications have been prepared and videotapes designed to introduce future studies are being made.

WORLD EDUCATION PROJECT U-32, School of Education, University of Connecticut, Storrs, Ct. 06268.

Encourages studies of the Third World (Africa, Asia, Latin America, the Middle East), ethnic diversity in Connecticut, and problems of development, peace and world order. Issues monographs and curriculum guides, holds conferences and workshops and sponsors research.

A SHORT READING LIST ON EDUCATIONAL FUTURISTICS

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